23. A method according to claim 21, wherein the layers penetrate the spacing between the warp and weft thread groups and deform the textile grating to frictionally interlock the layers with the textile grating.

REMARKS

This paper is being provided in response to the February 28, 2002 Office Action for the above-referenced application. In this response, Applicant has made minor modifications to the specification, amended claims 1-8 and added new claims 9-23 in order to more particularly point out and distinctly claim that which Applicant deems to be the invention. Applicant respectfully submits that the changes to the specification do not add new matter and that the modifications to claims 1-8 and new claims 9-23 are all supported by the originally filed application.

Most of the rejections of claims 1-8 based on 35 U.S.C. 112, second paragraph are addressed by the amendments provided herein in accordance with the guidelines set forth in the Office Action. With respect to the rejection of claim 1 based on 35 U.S.C. 112, second paragraph based on the term "high-strength", Applicant respectfully submits that, looking to the specification, one of ordinary skill in the art would know the meaning of the term "high-strength" and therefore would be apprised of the scope of the invention. As described in the specification, the present invention relates to a textile grating used for reinforcement purposes in civil engineering. A person of ordinary skill in the art would know that, as described in the specification, textile gratings used for reinforcement purposes in civil engineering are subject to heavy loads from ground layers, heavy

machinery, etc. Therefore, a person of ordinary skill in the art reading the specification would know that the disclosed high-strength synthetic yarns used to make the reinforcement gratings provide the requisite strength to support the heavy loads encountered in use of the grating.

The specification provides examples of types of high-strength synthetic yarns that may be used in the present invention. Polyester yarns, but also PVA or aramide yarns, ensure a long-lasting reinforcing action. (Page 1, lines 26-27) The specification also indicates that it is also possible to use other synthetic materials, for example polyolefins such as polyethylene or polypropylene, to form the high-strength yarns. (Page 1, lines 26-30) Accordingly, Applicant submits that a person of ordinary skill in the art is reasonably apprised of the scope of the present invention, including the recited high-strength yarns. Accordingly, Applicant respectfully requests that this rejection be withdrawn.

The rejection of claims 1-5 based on 35 U.S.C 103(a) as being unpatentable in view of Schottenfeld (U.S. Patent No. 5,707,903, hereinafter referred to as "Schottenfeld") is hereby traversed and reconsideration thereof is respectfully requested. Applicant respectfully submits that the present claimed invention is not obvious over Schottenfeld.

Claim 1, as amended herein, recites a textile grating for reinforcing layers that has a plurality of individual threads of high-strength synthetic yarns grouped to form weft

thread groups and warp thread groups. The weft and warp thread groups are connected to each other such that each weft and warp thread group are at a spacing of least 8 mm relative to the respectively adjacent parallel thread group to provide for penetration of the grating by the layers. The weft and warp thread groups are covered by a polymer coating that contains regularly distributed gas inclusions such that the polymer coating is a foam structure.

Independent claim 5 recites a method of producing the textile grating for reinforcing layers recited in claim 1. The warp threads and weft threads are connected together to form warp thread groups and weft thread groups. Each warp thread group and weft thread group are connected such that each are at a spacing of at least 8 mm with respect to the respectively adjacent parallel thread group to provide for penetration of the grating by the layers. The thread groups are wetted with a material that is capable of flow and that contains a polymer-forming substance. The material that is capable of flow is a propellant that produces gas inclusions during setting of the polymer. Thus, the warp and weft thread groups are covered with a coating by virtue of the polymer setting.

Schottenfeld relates to a flexible laminated liner having a non-slip side and a decorative side opposite the non-slip side. (Column 1, lines 7-9) Schottenfeld discusses the problems with various liners, such as shelf paper, made for covering surfaces to protect the surfaces and improve their appearance. (Column 1, lines 11-33). Schottenfeld discloses an improved liner that, unlike shelf paper, can be easily removed from a surface and reused. (Column 1, lines 36-45) The liner 10 is comprised of a non-

slip pad 12 having a decorative sheet covering 14 bonded to the pad by a layer of adhesive 16 or the like. (Column 2, lines 14-16)

The non-slip pad 12 of the Schottenfeld liner is of the type formed from a scrim 20 coated with a polyvinyl chloride (PVC) foam 22. (Column 2, lines 17-19) The scrims 20 are made of natural or synthetic fibers which are either knitted or woven into a network having intermittent openings spaced along the surface of the scrim. (Column 2, lines 19-22) The openings are uniformly spaced along the scrim 20 in a repeating pattern. (Column 2, lines 22-23). The pad 12 is formed by dipping the scrim 20 in liquid PVC and curing the dipped scrim in an oven. (Column 2, lines 29-30) While being cured, a chemical reaction causes gas to be entrained in the PVC as it solidifies thereby causing voids in the PVC. (Column 2, lines 30-32) When the PVC solidifies entirely, the voids remain in the PVC to produce a soft, resilient, elastomeric, foam material. (Column 2, lines 32-34) The resulting flexible pad 12 has generally uniform open cells 26 corresponding to the openings in the scrim 20. (Column 2, lines 34-36)

Schottenfeld does not disclose the element of "weft and warp thread groups are each at a spacing of a least 8 mm relative to the respectively adjacent parallel thread group to provide for penetration of the grating by the layers" recited in Applicant's claims 1 and 5. As indicated in the specification of the present application, the recited meshes provide that, when the gratings are put into position, pieces of the ground or the respective reinforced layer penetrate through the meshes and in that way provide for interlocking engagement and a tight bond between the textile grating and the reinforced

layer. (Page 2, lines 9-13) The Schottenfeld device is unlike the grating of the present invention; nothing penetrates the non-slip pad in the liner of Schottenfeld because a decorative sheet is bonded to the non-slip pad.

Furthermore, it is worth noting that removing the decorative sheet from the non-slip pad renders the liner inoperative for its function of providing a decorative non-slip surface liner that offers improvements over shelf paper. In fact, Schottenfeld teaches use of the sheet covering by indicating that a liner with a sheet covering the open cells of the non-slip pad is advantageous because it eliminates the opportunity for debris and small objects to fall into the cells or become lodged in the pads. (Column 4, lines 10-16) However, if the Schottenfeld device is used for reinforcing layers like the present invention, the decorative sheet would prevent the layers from penetrating the grating and thus defeat the purpose of the present claimed invention. On the other hand, removing the decorative sheet covering would defeat the purpose of Schottenfeld. Applicant respectfully submits that a person of ordinary skill in the art would not make the present claimed invention by modifying the Schottenfeld liner in a way that destroys it and renders it inoperative for its intended purpose.

Furthermore, Schottenfeld also fails to disclose the recited feature of "high-strength synthetic yarns" set forth in the claims of the present invention. As described in the application, the high-strength synthetic yarns afford excellent resistance to rotting and weathering and have extensively proven themselves in civil engineering in the past. (Page 2, lines 6-9) In addition, high-strength synthetic yarns are used in the textile

grating because they afford the necessary strength to support the heavy loads encountered in reinforcing layers in civil engineering applications. In contrast, Schottenfeld does not disclose the use of high-strength yarns at all. This is not surprising since there is no reason to use high-strength synthetic yarns in making the liner of Schottenfeld. Schottenfeld does not disclose the need to provide a liner strcng enough to support heavy loads and resist rotting and weathering. The Schottenfeld liner sits on a surface, such as a shelf, and the surface bears the weight of objects placed on the liner. The non-slip pad, which is formed of PVC-coated scrim, prevents the liner from moving while in use and also permits easy removal for cleaning or re-use because it is not permanently adhered to the surface. (Column 3, line 40 – Column 4, line 5) Use of a high-strength yarn for the scrim in Schottenfeld would serve no function for the device described therein. In addition, assuming high-strength yarns cost more than regular yarns, using a high-strength yarn in Schottenfeld would be inconsistent with Schottenfeld's advantage of a low cost foam pad. (Column 2, lines 56-58)

Furthermore, Schottenfeld's liner and the Applicant's textile grating serve different and unrelated purposes. The decorative non-slip surface liner is laid on a surface, is used to protect a surface and improve its appearance, and can be easily removed from the surface. In contrast, Applicant's textile grating is installed between layers of construction material, typically buried between ground layers, and cannot be easily removed. The textile grating is used for reinforcing layers and does not protect a surface or improve its appearance.

Schottenfeld's liner and the Applicant's textile grating also address different problems. Shottenfeld identifies the following disadvantages of previous surface liners, namely shelf paper: (1) permanent residue or marks remain the surface by the adhesive when the shelf paper is removed; and (2) shelf paper offers very limited protection for preventing damage to surfaces because it is made from a thin sheet. Shottenfeld purports to address these problems with a liner having a non-slip pad bonded to a decorative sheet. In contrast, the Applicant does not seek to solve problems caused by adhesives or to prevent damage to surfaces. The specification discusses the advantages and disadvantages of known textile gratings used in civil engineering, particularly textile gratings that are used for reinforcing ground layers. For example, the polymer coating on the known textile gratings is relatively dense, rigid and inflexible. (Pg. 2, lines 14-15) The density and rigidity can cause problems handling the grating and cracking or chipping of the polymer coating. (Pg. 2, lines 15-25) In addition, the rigid coating limits the deformation of the grating itself. (Pg. 2, lines 17-18) The digging-in engagement between known gratings and reinforced ground layers therefore occurs solely by virtue of pieces of ground which project through the meshes of the grating. (Pg. 2, lines 18-21) These problems are particular to textile gratings used in civil engineering and have nothing to do with preventing damages to surfaces by adhesives, falling objects, or other means.

Applicant also respectfully submits that Schottenfeld must be "analogous prior art" in order to support a rejection based on 35 U.S.C. 103(a). MPEP 2141.01(a) states:

> In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.

Applicant respectfully submits that Schottenfeld is nonanalogous art because the liner of Schottenfeld is in no way related to the Applicant's field of endeavor and is not pertinent to the particular problems the Applicant addresses with the present invention.

As indicated in the specification and as discussed above, the field of endeavor for the present invention is civil engineering. Schottenfeld does not relate to civil engineering in any way and is not pertinent to the aforementioned problems the Applicant addresses in the present invention. Schottenfeld discloses a decorative non-slip surface liner that includes a foam pad and offers improvements over shelf paper. Applicant discloses an improved textile grating for use in civil engineering. Known textile gratings used in civil engineering are rigid because large pieces of gravel and heavy machinery come in contact with the textile grating during installation and use. Changes to the rigidity of known textile gratings have been resisted by those skilled in the art because of concern about durability. Accordingly, an inventor in the field of civil engineering seeking to solve problems with known textile gratings used for reinforcement purposes in civil engineering would not reasonably look to art that relates to a household product such as a decorative non-slip surface liner, particularly one that includes a non-rigid foam pad.

For the reasons discussed above, Applicant respectfully submits that the present invention is not obvious over Schottenfeld. Accordingly, Applicant respectfully requests that this rejection be withdrawn.

The rejection of claims 6-8 based on 35 U.S.C 103(a) as being unpatentable over Schottenfeld in view of Sasajima et al. (U.S. Patent No. 4,434,251, hereinafter referred to as "Sasajima") is hereby traversed and reconsideration thereof is respectfully requested. Applicant respectfully submits that the present claimed invention is not obvious over Schottenfeld in view of Sasajima.

Sasajima discloses a cross-linked polyvinyl chloride resin foam having uniformly fine cellular structure with low density, which has high thermoformability and heat resistance, and method of manufacturing the same. The Office Action apparently uses Sasajima show that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a plasticizer in liquid PVC to coat the woven scrim of Schottenfeld motivated by the desire to obtain a foam coated scrim that has greater flexibility. In addition, the Office Action apparently uses Sasajima to show that it would have been obvious to have made the PVC or polymer coating by an emulsion polymerization method motivated by the desire to use a known method for producing foamed PVC; and to have cured the PVC foam at temperatures ranging from 170°C to 250°C or preferably from 170°C to 240°C.

Sasajima does not disclose the recited features of "weft and warp thread groups are each at a spacing of a least 8 mm relative to the respectively adjacent parallel thread group to provide for penetration of the grating by the layers" and "high-strength yarns" as recited in the claims of the present invention. Therefore, the deficiencies of Schottenfeld discussed above with respect to claims 1-5 are not overcome by the teachings of Sasajima. Claims 6-8 depend from claim 5. Accordingly, Applicant respectfully requests that this rejection be withdrawn.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-951-6676.

Respectfully submitted,
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Clean Copy of Amended Sections of the Specification

The paragraph beginning on line 6 of page 1:

A2

The invention concerns a wide-mesh textile grating for reinforcement purposes in civil engineering, in particular for reinforcing ground layers and a method of producing such a grating.

The paragraph beginning on line 26 on page 2:

A3

It is desirable to provide a textile grating and a method of production thereof, which substantially eliminates the disadvantages described hereinbefore.

The text after page 2, line 29:

A4

The present invention provides a wide-mesh textile grating for reinforcement purposes in civil engineering, in particular for reinforcing ground layers. The textile grating comprises weft thread groups and warp thread groups which are connected together, preferably by weaving or knitting, and which are each at a spacing of at least 8 mm relative to the respectively adjacent parallel thread group, and the individual threads of which are formed by high-strength yarns. The warp thread groups and weft thread groups of the textile grating are covered by a polymer coating, characterized in that the polymer coating contains regularly distributed gas inclusions so that the polymer coating is of a foam-like structure. The individual threads of the warp thread group and the weft thread group may comprise multifilament yarns which are impregnated by the foam-like

polymer coating. The polymer coating may comprise PVC. The gas inclusions may be may be a diameter of less than 1 mm, preferably less than 0.3 mm.

The method of producing the present textile grating includes connecting high-strength warp threads and weft threads together, in particular, by a weaving or knitting procedure, in such a way that they are respectively combined together to form warp thread groups and weft thread groups which are each at a spacing of at least 8 mm with respect to the respectively adjacent parallel thread groups. The thread groups are then wetted with a mater which is capable of flow and which contains a polymer-forming substance and are covered with a coating by virtue of setting of the polymer, characterized in that added to the material which is capable of flow is a propellant which produces gas inclusions during setting of the polymer. The pasty mixture may comprise PVC mixed with a plasticiser and that the method may include heating the textile grating to a high temperature, preferably about 200°C, for gelling the polymer coating of PVC. The material which is capable of flow may be formed by a polymer dispersion, for example a latex, polyacrylic or polyurethane dispersion, and heating the textile grating to a high temperature above 100°C for evaporation of the water contained in the dispersion and for polymerization. The method may use a propellant which liberates gas bubbles at a high temperature of over 100°C.

The paragraph beginning on line 22 on page 4:

It is possible to add to the material which is capable of flow a propellant which produces gas inclusions during setting of the polymer.

Clean Copy of the Amended Claims

1. (Amended) A wide-mesh textile grating for reinforcing layers, comprising:

a plurality of individual threads of high-strength synthetic yarns forming weft thread groups and warp thread groups, wherein said weft and warp thread groups are connected together and wherein said weft and warp thread groups are each at a spacing of at least 8 mm relative to the respectively adjacent parallel thread group to provide for penetration of the grating by the layers, and wherein the warp thread groups and the weft thread groups are covered by a polymer coating, characterised in that the polymer coating contains regularly distributed gas inclusions so that the polymer coating is of a foam structure.

2. (Amended) A textile grating according to claim 1 characterised in that the individual threads of the warp thread group and the weft thread group comprise multifilament yarns which are impregnated by the foam polymer coating.

3. (Amended) A textile grating according to claim 1 characterised in that the polymer coating comprises PVC.

4. (Amended) A textile grating according to claim 1 characterised in that the gas inclusions are of a diameter of less than 1 mm.

5. (Amended) A method of producing a textile grating for reinforcing layers in which high-strength warp threads and weft threads are connected together in such a way that they are respectively combined together to form warp thread groups and weft thread groups which are each at a spacing of at least 8 mm with respect to the respectively adjacent parallel thread group to provide for penetration of the grating by the layers, and wherein the thread groups are then wetted with a material which is capable of flow and which contains a polymer-forming substance and wherein said warp and weft thread groups are covered with a coating by virtue of setting of the polymer, characterised in that added to the material which is capable of flow is a propellant which produces gas inclusions during setting of the polymer.

6. (Amended) A method according to claim 5 characterised in that the material which is capable of flow is a pasty mixture comprising PVC mixed with a plasticiser and that the textile grating is heated to a high temperature for gelling the polymer coating of PVC.

7. (Amended) A method according to claim 5 characterised in that the material which is capable of flow is formed by a polymer dispersion, and that the textile grating is heated to a high temperature above 100°C for evaporation of the water contained in the dispersion and for polymerisation.

8. (Amended) A method according to claim 5 characterised by the use of a propellant which liberates gas bubbles at a high temperature of over 100°C.